Modified Protocol for recovery from surgery for complete hamstring avulsion – created for Dr. Scott Martin, Brigham and Womens

(this is provided for information only. Use some or all of it at your own risk) November 2011. This protocol is a hybrid, and refers mostly to the protocol used by Scott Martin. Several other protocols are also included.)

Pre-surgery

Make sure you have the brace a couple of days in advance, and really wear it to get the feel for how it restricts your movement. Try sitting down, leaning against surfaces, lying in bed, etc. This will be your best friend and worst enemy for the next 6 weeks, so get used to it! Also now is a good time to remove every area rug from the floor. Most surgical setups will also have you wash with a very strong antiseptic soap for the two or three days pre-surgery. If you do not get that info, get an antibacterial wash like Phisohex and use it pre-surgery.

Items that will make your life easier:

- Flexible straws. You can't drink much while lying down without these straws.
- A raised, sloped toilet seat with the seat cut away on the same side as the surgery. You won't be sitting on a regular toilet seat for a long time…… Amazon has them. http://www.amazon.com/gp/product/B0002Q19KM
- A padded stool, about 26 inches high, adjustable height. It will be the only thing that you can sit on for a long time. No arms.
- A tilting hospital over-bed table. The tilting part is nice, especially if you have a computer and plan to work from home during rehab. If you get a tilting one, it is good to have a section of it that does not tilt, like this one. http://www.amazon.com/Tilt-Top-Overbed-Table-No-Slide-Area/dp/B004KN6M1E/ref=sr_1_57?ie=UTF8&qid=1318431281&sr=8-57
- A nightstand next to the bed. The light needs to be easy to turn off without rolling over.
- A reaching grabber. When you drop something, you need to be able to pick it up. And you will need it to dress yourself. This one works well http://www.amazon.com/gp/product/B0009STNME
- A seat cushion. These are good because you can inflate them very little, then double them over and use them in the car or on a chair or stool, sitting on it with only one cheek on the cushion. Also good while driving. http://www.corflex.com/products/cervical-spine/back/back-miscellaneous/medic-air-seat-cushion/
- A portable phone within arms reach.
- Flushable baby wipes. Much better than toilet paper for the first couple of weeks, while you are trying to keep the wound from becoming infected.
- Extension cords plugged in where you think you will need them. You won't be able to plug anything in later – too far away and down close to the floor. Don't forget chargers for cell phones, etc.
- A TV within sight while you are lying down.

Day of Surgery

Nothing goes into the mouth after midnight. No water, no coffee, no food. Nothing.

Before surgery, you will arrive and the pre-op people will make sure what they are operating on, and give you an intravenous line. You will also be signing consent forms, so make sure you are comfortable with what is being done. This is usually day surgery, so you will go home immediately afterward. ***This is a good thing, since it minimizes your contact with other hospital borne pathogens.*** After you wake up from the procedure, you will be in your brace, and you will be expected to get in a car and leave. No ambulances here – you need to get yourself home with the help of spouse, family and friends. If you have many stairs to climb, some ambulance services will, for a nominal fee ($100) provide a carryup service, where an ambulance crew meets you outside the front door of your building and carries you up to your room (you never get into the ambulance). If you would rather use crutches to go up the stairs, they will spot you and make sure you do not fall. You will still be pumped full of pain killers and other meds, so you may feel a bit other-worldly, but you will not have much or any pain, so you can do this.

Remember, you will be flat on your back in the car, since the brace prevents you from sitting. Back seat is best.

Week 1 – in bed about 18 hours per day or more. Brace on 100% of time, except when toileting.

The doctor will have you back to his office about day 5 to inspect your dressing. No showers, no getting the dressing wet, no taking the dressing off, no weight on the affected side. No alcohol with major pain killers. If you think you need to ask if you can do something, the answer is probably "No". The trip to the doc on day 5 will be difficult, but not impossible. Take an extra advil or Tylenol (whatever he has you on) and go slowly. You will be tired on your return home. Ask all the questions you can think of about your care.

About pain – pain can inhibit healing. Don't try to be stoic. Use painkillers if you need them, but try to get to only Advil or Tylenol as soon as you are able. For some people this is day one or two, for others it is week five. Major painkillers are addictive, so you don't want to be on them longer than you need to be. One or two shooting nerve pains is not unusual, nor is pain that feels like a bad sunburn on the back of your leg. You should not feel any tug on your newly-repaired tendon.

Week 2 – in bed 16-18 hours per day. Brace on 100% of time, except when toileting.

Swelling starts toward the end of week 1 , and will get worse before it gets better. No, you cannot do any exercise other than ankle pumps. This is about healing, not rehabbing. To paraphrase one of Dr. Martin's fellows: "This is all about healing. Whenever you think you want to push it, don't. Pushing is not part of the program". At 12 – 14 days post-surgery you will have a second appointment. Dr. Martin will remove the dressing originally put on in the operating room and replace it with a new one, covered with a saran-wrap type material that keeps the water (and toileting splash) out. If you have been careful cleaning after toileting and everything is going well, the incision area will be healing nicely. The internal repairs, however, have a long way to go. This is a tough operation. You have a lot of your original injury and the movement of all the muscles in the area that has to be worked out. In addition, the tendon has to heal back to the bone. If you push it this week, you will throw a stitch, and you will go backwards for a week. REPEAT AFTER ME : DO NOT PUSH IT. The only four letter words you can use are REST and HEAL. Not push.

Week 3– in bed 14–16 hours per day. Brace on 100% of the time, except when toileting/showering

You are really bored now, and anxious to get going and get out of the brace. . About 20 days after surgery, you will have your third doctors visit. If the incision site has healed sufficiently, you will get a new gauze pad over the incision site, but not a plastic cover, and you will be given another appointment in 3 or 4 weeks, depending on his analysis of your progress. This means you will be in the brace for another 3 or 4 weeks. Get used to it. Don't complain. In the course of your overall life and the quality of repair that you want, this is a drop in the bucket.

You should be aware that Dr. Martin will give you conflicting signals. On one hand, he wants you in the brace absolutely every waking minute. But at the same time he will tell you that he is not necessarily going to use the brace a lot in the future. This is the story behind the story:

You do not need a brace to recover from this surgery. It is mostly a hindrance to movement of your leg and hip, and will give you more problems than it helps. ***However, there is a real possibility of stubbing your toe when walking, or of mis-stepping on stairs, or of just falling down. And remember that you make strange movements when you are asleep. If you re-injure this in the first 4 – 6 weeks, you will probably be in for another surgery, if you can tolerate it, and you start again at square one.***

The likelihood of you re-injuring is real. If you mis-step, or stub your toe, or fall, or stretch your leg incorrectly in your sleep, it will not be on purpose, but rather an accident. No matter how careful you are, you can have an accident without warning. The brace is there to prevent the accident from becoming a disaster, both for your personal recovery, and possibly for the quality of your life going forward.

Wear the brace.

You can take if off for showers now, being extraordinarily careful in the bathroom, as well as for toileting. But wear it almost all of the time. If you need to take it off to sit down (permissible after week 3 but not recommended) , then make sure you curl your lower leg below you, and make sure to buckle-up again when you stand up to go somewhere else. **Even if just 15 feet to another part of the room**. This is your insurance policy – use it wisely. The leg will return to full function eventually, but right now it needs to heal. Your future looks like this:

1. skin and the incision heals - weeks 1-3 or 1-4
2. tendon heals - this takes 12 weeks at the least – it ok after 7 weeks.
3. get your motion back – week 6-12 or 7-13
4. get your strength back – week 8 or 9 to week 20 or 26 (yes, that is 6 months)
5. get your function back – comes back starting in week 8 or 9 and continues for 2 years. Yes, you will still feel vestiges of the operation for a couple of years, usually reported as continued soreness or tiredness deep inside the muscles in the leg, and occasionally soreness sitting.

If you are a pro sports person – you train all the time, get paid by a professional team, have a contract, and have to be on top of your game, it will be 6 to 8 months. For the rest of us (the other 99%) it will be 12 to 24 months.

Week 4 – in bed 12-14 hours per day

About this time you have figured out how to sit, although not comfortably. Perching on the side of a stool, or slouching down. Keep the knee bent at all times. Maybe you will be able to sit in a cushy, upholstered armchair. Arms make it easier to get up. It is still quite tiring to be up, since you can only sit awkwardly. Showers are great and feel cleansing after all the spongebaths of prior weeks, but not fun, and still require help to get in and out, as well as drying off the lower part of your affected leg. You have mastered stairs, although it is still a struggle. One thing that is still a problem is swelling of the foot and lower leg. Standing for any length of time causes the affected leg to swell. Advil helps some, but really the best thing is to get a compression sock that comes up to just below the knee. It keeps the blood flow from pooling in the foot area and helps prevent clots. (Deep vein thrombosis) Ugly as sin. But it works. Keep a positive attitude, and try to get outdoors once a day to walk (with crutches, no weight on affected leg). You will be surprised at how much work it is to walk to the corner, or 100 feet along a path. Be careful, watch where you put your crutch so that you don't slip, and enjoy the day!

Week 5 – up a fair amount of the day

This week is the turning point, and by the end of the week (5 weeks post surgery) you are up more than you are down. Pain meds become less important, and you may be able to forego them entirely, depending on your particular circumstances. Don't try to tough it out, however, and use them as you need them. If you have been using something to sleep, like Advil PM or something else, plan on having a half dozen tough nights as you come off the medication. If you stop Advil (ibuprofen) or Tylenol (acetaminophen) make sure that you keep taking the aspirin your doctor recommended to keep your blood thin. By the end of week 5, you will probably be able to walk outside with crutches and no weight on the bad leg for about ½ to ¾ of a mile. You will be tired and your underarms will hurt. But it keeps you going. Some docs will have you in PT by this time, but not Dr Martin.

Week 6 – feeling the healing

During the 6th week, you will probably try to walk too far, or do too much, and you will find that you are still quite weak, the muscles and tenons are still short and tight. Doing too much puts you back a day or two. You will still find that it is tough to stay upright all day, but you are gaining strength and endurance. At the end of week 6, you will be up all day, and sitting more comfortably, but still cannot drive or really work well.

Bradley Protocol as of 8/2010

Here is the latest PT therapy protocol from Dr. Q as used by Dr. Bradley (he now uses a different brace (Breg T-scope brace) other than the one that goes around the waist and to the knee like in his article)

Phase I (weeks 2-4)
-PROM starting in week 2 with hip and knee
-Gentle AROM around week 3 or 4
-Brace removed for therapy
-Discontinue brace approx. 4 weeks after surgery depending on repair strength but use crutches for stability

Phase II (weeks 4-8)
-Full weight bearing permitted at 4-6 weeks if patient demonstrates normal gait patterns
-Aquatic walking and ROM
-Closed chain emphasis with limited ROM
-Isotonics in limited ROM, avoid terminal range of extension
-PROM knee extension and hip flexion
-Initiate core pelvic strength training

Phase III (weeks 8-12)
-Progress isotonic strength training
-Advanced dynamic training

-Concentrate on core pelvic training
-Strength evaluation at 10 weeks - isometric mode only at 60 degrees of knee flexion

Phase IV (weeks 10-24)
-Dry land jogging/running
-Functional hop testing
-Sport specific activities
-Sport specific training

Phase V
-Full isokinetic evaluation at 60, 120 and 180 degrees/sec, bilateral comparison upon physician order.

From 2007 paper

The rehabilitation protocol described below was used for each of the patients in our series. This allowed for consistency regardless of findings at surgery or "tension" of the repair.

The first phase of rehabilitation consists of toe-touch weight bearing for 10-14 days with advancement to 25% weight bearing for the next three weeks. This allowed slight hip and knee flexion, taking care to prevent any stress on the tendon repair.

Passive range of motion (PROM) of the knee and hip is begun at week 2 and gentle active ROM is initiated by week 4. The brace is discontinued by week 6.

The second phase starts with full weight bearing at week 5 and normal gait training. PROM and AROM are progressed as well as aqua therapy. Isotonic exercises are begun within a limited range of motion avoiding the terminal ranges of motion. Core pelvic strength training and closed chain exercises are also initiated.
At 8 weeks after surgery, isotonic strength training is progressed and dynamic training is advanced. An isometric strength evaluation at 60 degrees of knee flexion is performed at 10 weeks.

The final phase of rehabilitation consists of the initiation of dry land jogging after 10 weeks. A full isokinetic evaluation is performed at 60 degrees, 120 degrees, and 180 degrees/second and compared to the nonoperative side. This provides objective evidence of strength deficits for patients and therapists, and allows specific milestones for return to sport. Sports specific activities are continued and return to sporting activity is allowed when isokinetic testing is 80% of the unaffected side, similar to return for patients after ACL reconstruction [9]. This typically occurs between 6 and 9 months.

The results of our current series of acute hamstring repairs include 7 patients with 8 hamstring repairs (one bilateral) with an average patient age of 42.7 years (range: 24-58). All injuries occurred via an eccentric contraction of the hamstrings. Subjective complaints consisted of pain, weakness, and difficulty sitting. All repairs were performed with the surgical technique described above at an average of 5.7 days after injury. All patients underwent preoperative MRI. The average time to return to function / athletics was 8.5 months including one patients' return to professional football. Five

patients who underwent Cybex testing revealed greater than 80% strength compared to the uninjured side at an average of 5.8 months. All patients were satisfied with the procedure at latest follow-up of greater than 6 months and 6 of 7 returned to preoperative sport or activity level.